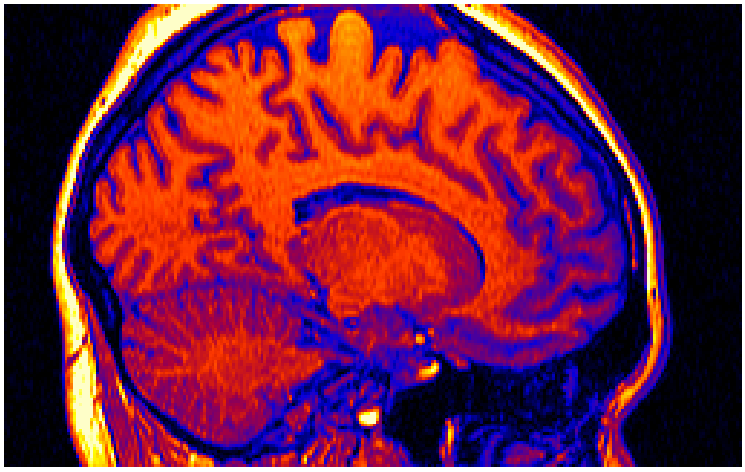

Perceptions of the role of neuroscience in education:

Teacher-friendly report

Commissioned by the The Innovation Unit

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Neuroscience and Education: Teachers' Views

Background

Our burgeoning knowledge about the brain has prompted calls for more efforts to enhance educational practice with insights from neuroscience. Many teachers are familiar with the so-called 'brain-based' learning programmes that have already proliferated, and governments around the world are now looking seriously at funding collaborative research between neuroscience and education. For example, the 'Brain and Learning Project' is a supra-national initiative that has brought together neuroscientists and educators to review potential implications of recent brain research findings for policy makers and suggest areas for future collaborative research. Yet, this project has also drawn attention to the growth of 'neuromyths' – unhelpful and inaccurate ideas about the brain that have proliferated throughout popular culture and schools (OECD, 2002). Indeed, many of the entrepreneurial attempts to inform education with neuroscience, such as those falling under the brand of accelerated learning, and other ideas such as Educational Kinesiology, have proved controversial.

So what are teachers' views about the role, past and future, of the brain in education? We analysed the views of 150 education professionals in the UK, mostly teachers, about the role of neuroscience in education. Our sample included primary and secondary teachers and headteachers, learning support/teaching assistants, consultants, school inspectors, and teacher trainers, but views were generally consistent across these different sub-sectors of education.

What we found

Applying what we know about the brain to education has a common-sense appeal, even though traditional approaches to education do not include neuroscience. As one teacher put it:

> *"... it's an awful thing to say, being a teacher, but I think you'd probably find a lot of people in the same boat - I'd never really given the brain much thought, because it's just something that you take for granted."*

Most educators generally believe that our understanding of the brain should contribute to education in a variety of different ways. A large majority of teachers believe brain science is important in special needs education and in the design and delivery of non-special education. One teacher explained:

> *"… if you understand more of the workings of the brain – well, if that informs teaching, then that informs all teaching."*

The rising profile of the brain in science documentaries is paralleled by teachers' increasing interest. However, rather than from television and the media, teachers' responses emphasised that INSET and conferences are the most important sources of brain knowledge for them, with professional books and journals also contributing. Many of the teachers who had made contact with brain-based ideas about their teaching spoke enthusiastically about their experiences:

"And I've gone from one extreme to the other, from not thinking about it at all to suddenly thinking, oh my God, it's crucial for everything, its really, really important ... .the impact that it might have on our thought processes, and then also our physical actions."

"I think it's incredibly important, because particularly now I find it's affecting my teaching already and particularly my reading groups ..."

The type of brain-based learning ideas that teachers encounter vary considerably. Almost a third had used 'Educational Kinesiology', while other popular techniques considered to be brain-based were Multiple Intelligences and Learning Styles. Teachers tend to see brain-based ideas as becoming an important part of their repertoire of approaches or, as one teacher put it "*part of a rich and varied pull-down menu of strategies and techniques available".* Experience with many of these techniques is variable although, interestingly, more than half of those who had tried Educational Kinesiology found this technique to be useful. Perhaps more than any other 'brain-based' approach, Educational Kinesiology (usually commercially promoted as Brain Gym) has attracted considerable criticism for its lack of scientific basis. A recent rehearsal of the arguments in the Guardian newspaper described it as having "a scientific explanatory framework that is barkingly out to lunch" (The Guardian, 26 March 2007). Some teachers feel that the scientific basis is secondary to the results actually achieved in the classroom, but most teachers felt there were important issues here. In fact, approximately three-quarters of the teachers surveyed felt that it was important see results in the classroom AND to interpret the scientific basis for brain-based learning ideas correctly. As one primary school teacher told us during an interview:

"… we want to know if there is any reason to believe this is true or isn't true … we'd like to know if we're doing the right thing or is there something more productive we could be doing? Is this a complete waste of time? Have I just bought 100 pounds worth of resources that may as well go in the play area rather than actually being used productively …"

There is a view amongst many teachers that the popularisation of many unscientific brain-based ideas has resulted from skilful marketing by gifted speakers. The scientific doubts surrounding these ideas lends weight to a view of their proponents as 'snake oil sellers'. Despite this, one respondent was at pains to point out that these initiatives often have an advantage over more academic efforts to inform, in terms of their ability to communicate effectively with teachers:

"... [the academics are] not seen as communicators always, whereas the snake oil sellers are often gifted communicators, and they're the ones that the teachers take home to come and teach them on their INSET days!"

A popular theme was a desire to have learned more, and earlier, about psychological and neuroscience issues as related to teaching. Teachers wanted to be able to evaluate brain-based ideas more critically. Many of those we interviewed felt that, as knowledge within these domains has been developing rapidly for some time, it should have been included in their initial teacher training:

"… I think if it's something that is kind of embedded at teacher training level, so when people start on their career at that stage they think, oh yes, this is really, really important and this is something which needs to have an impact throughout my teaching career, because it's something that's always going to be influential in terms of maybe how children are learning and responding to what I'm doing."

Some of the views we collected were from teachers attending a Brain and Education Research Conference at Cambridge University, where neuroscientists from around the world presented evidence they considered might be relevant to education. This provided a rare opportunity for scientific doubts to be expressed about the evidence used to promote ideas such as learning styles and Brain Gym. Two teachers expressed their frustration and feelings about this:

"… we've been a bit misguided about that sort of thing haven't we – but not having the time to verify it for ourselves, we have no choice …."

"It almost sounds silly now I say it, but I was so convinced by it …. So I guess it's a bit disappointing when you find out that something actually isn't … how you were led to believe it was …"

The future?

The conference at Cambridge was one of a series of recent events where educators and neuroscientists have been working together to identify areas of potential mutual benefit. These areas, around which future research projects may develop, are often different from those teachers commonly associate with brain-based learning. These include brain plasticity, teenage brain development, emotion and learning, ADHD and dyslexia (OECD, 2002, Blakemore and Frith, 2005). So, we also asked teachers what they thought the issues for successful collaboration between neuroscience and education might be. The greatest agreement amongst teachers (86%) was about the importance of a two-way dialogue, although issues of language were again emphasised:

"the neuroscientists … some of them have got a fantastic wealth of knowledge, but it's difficult for them to translate that knowledge into a format that is comprehensible to the teachers and relevant to the teachers."

"The other thing that I sort of noticed is that there's two different sorts of language. In terms of how things are presented there's a different language that labels things … teachers will say one thing and the researchers will say something else."

This participant went on to suggest that there was a need for a *"common ground of what things are called or guide notes so that people know what it is that they are talking about."*

There is, however, real enthusiasm for such a two-way communication and projects that deliver practical applications:

"I think it would be a great shame not to have that communication. But how you do it to suit both parties I think would need a lot of consideration, because … as interesting as

the information is, for a teacher you have to have some practical implication and it has to be deliverable and manageable…and I think previously that's what's caused difficulties… people don't suggest how you might go about it. And I think that it's important to think about that."

Some suggestions involved the development of professionals who are able to act as a bridge between the two disciplines:

"… some experts to bridge the gap … people that understand the educational terms and the scientific/technical terms to be able to see how it sort of translates from one to the other to make it useful … you need someone to be really picking holes in things and really getting the essence of what that experiment has or hasn't found out and then how that translates into layman's terms or teacher's terms to help in the classroom."

Many teachers expressed a belief that neuroscience can help children with learning difficulties in terms of understanding:

"It helps me. And I think it would also help particularly support assistants in school, who tend to be the people who generally work with these children. If you can say so and so does this … because … and he has to do it this way because of that, then it would actually help them."

in practical strategic ways:

"… we've got a programme that works for children who have reading difficulties …. And I think that that's directly coming from studies on neuroscience that have looked at working memory and the workings of the brain and the impact of language and so on … I think that's been really useful."

And in terms of attitudes:

"I think knowledge of why children have problems learning what they do is powerful both for the teachers and for the pupils and their parents, because it takes some of the pressure off … it takes away a lot of the … emotional overtones of finding it difficult to learn to read, or not being good at maths, or whatever else it is."

But it was felt equally important that that future collaborative research efforts between neuroscience and education should be of benefit to all children:

"I'd like to see it focussing on what typical learners do and how they learn, because there's a lot of children in our schools that aren't learning as effectively as they could be doing and I think that it's important to focus on them as well as the special needs kids… And I think that teachers will be very interested in what they can do for the majority of children."

More generally, some participants felt that neuroscience may, in the future, help promote a broader concept of what education is:

"*… it's probably in the context of what teaching actually is – the sort of 'meta-view' of it, because at the moment in secondary schools, teachers are very much subject-based and now with the development of neuroscience you have to see teachers more as educators … so they actually understand the stages that children learn at, how they learn more …"*

Conclusions

In summary:

- There is generally a positive interest amongst teachers, and across the educational community, in applying insights from neuroscience to education.
- Both the evaluation of classroom impact *and* the verification of any proposed scientific basis are considered to be important in such ventures.
- Perceptions of applying neuroscience in education have been partly influenced by so-called 'brain-based' learning programmes whose science is now seriously contested. While many teachers feel they have observed improved learning outcomes from these programmes, the teachers we interviewed would appreciate greater access to evaluative evidence that scrutinises their scientific basis and their effectiveness.
- Irrespective of debates about current brain-based learning programmes, teachers are supportive of future collaboration between neuroscience and education, but emphasise the need for improved communication and a two-way dialogue that is grounded in the practical needs of educators.

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To find out more about current efforts towards collaborative research between neuroscience and education, go to the ESRC-TLRP 'Collaborative Frameworks' website:

www.bris.ac.uk/education/research/sites/brain

and/or join the information network by e-mailing your name, institution and occupation to

ed-neuro@bris.ac.uk

*NE*net, in collaboration with the OECD, are now carrying out an online global consultation. If you would like to contribute your views, go to:

www.bris.ac.uk/education/research/networks/nenet

References:

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